BEAVER VALLEY

By G. W. Sandberg

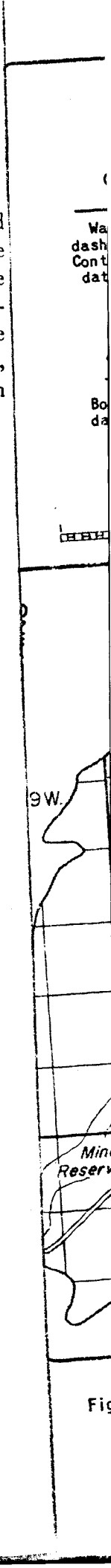
Beaver Valley includes about 200 square miles in Beaver County between the Tushar Mountains on the east and the Mineral Mountains on the west. The Beaver River enters the valley from the east and flows across the valley to the Minersville Reservoir on the west.

Ground water occurs in the valley in unconsolidated deposits under both water-table and artesian conditions. The recharge areas for the aquifers are along the western base of the Tushar Mountains, and ground water then moves southwestward through the valley, paralleling the course of the Beaver River. Water is diverted from the river for irrigation along its entire course through the valley, and infiltration of part of this water is an additional source of recharge to the aquifers. The direction of movement of the ground water is shown in figure 47, a map of water-level contours in March 1962. The pattern of the contours did not change significantly between March 1962 and March 1964.

Ground water in Beaver Valley is discharged by springs and seeps, by evapotranspiration, by wells, and by a small amount of underflow out of the valley. The main areas of discharge by springs, seeps, and evapotranspiration is where piezometric heads are above the land surface. This area, where wells will flow, is shown in figure 47.

Approximately 100 wells are in the valley, and 18 are pumped for irrigation. The discharge from wells has remained relatively constant during the past 5 years at about 6,000 acre-feet per year. In 1963, about 5,000 acre-feet was pumped for irrigation, about 100 acre-feet was pumped for public supply, about 50 acre-feet was pumped for stock and domestic use and some irrigation, and about 1,000 acre-feet flowed from wells for use by stock and for some irrigation.

Water levels in the valley rise during the spring and summer, because of recharge from the large amount of surface water used for irrigation, and decline during the winter. Levels showed little overall change during the period 1935-63 in spite of significant changes in the pattern of precipitation (fig. 48). Figure 49, which shows the change in water levels from March 1963 to March 1964, indicates that the largest declines are in the eastern part of the valley, close to the recharge area.



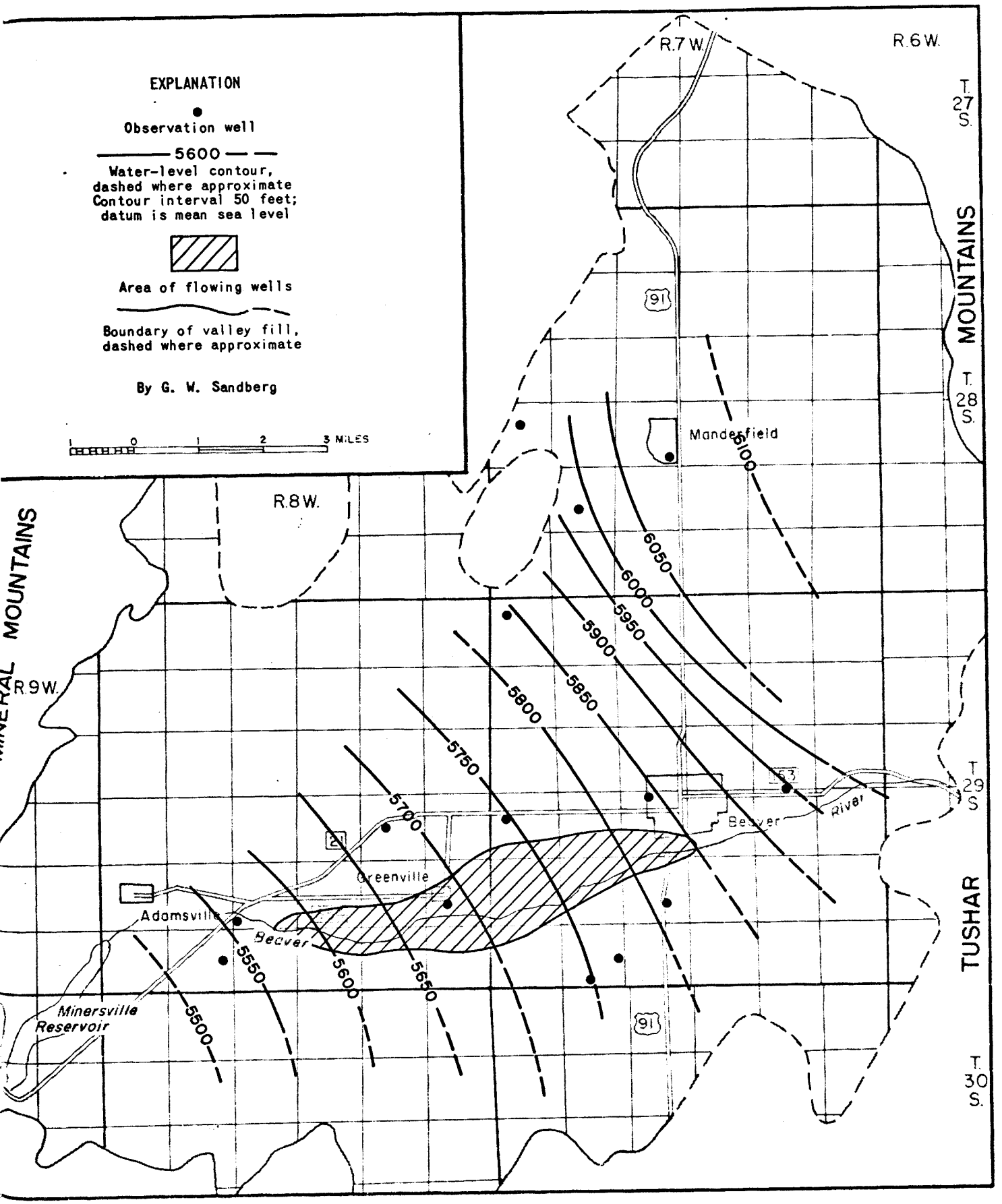


Figure 47.--Map of Beaver Valley showing water-level contours and the area of flowing wells in March 1962.

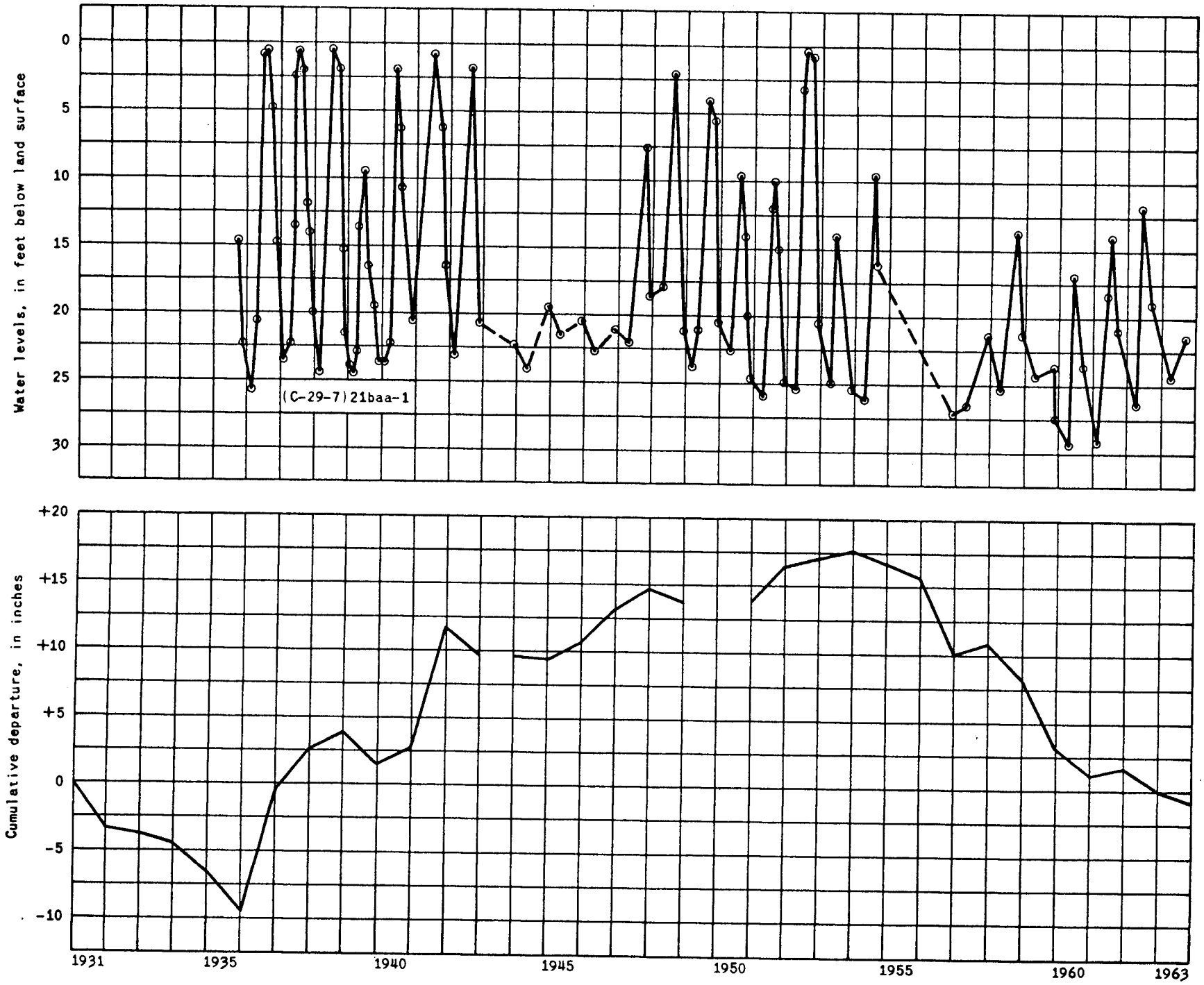


Figure 48.--Hydrograph of well (C-29-7)21baa-1 and cumulative departure from the 1931-60 normal annual precipitation at Beaver.

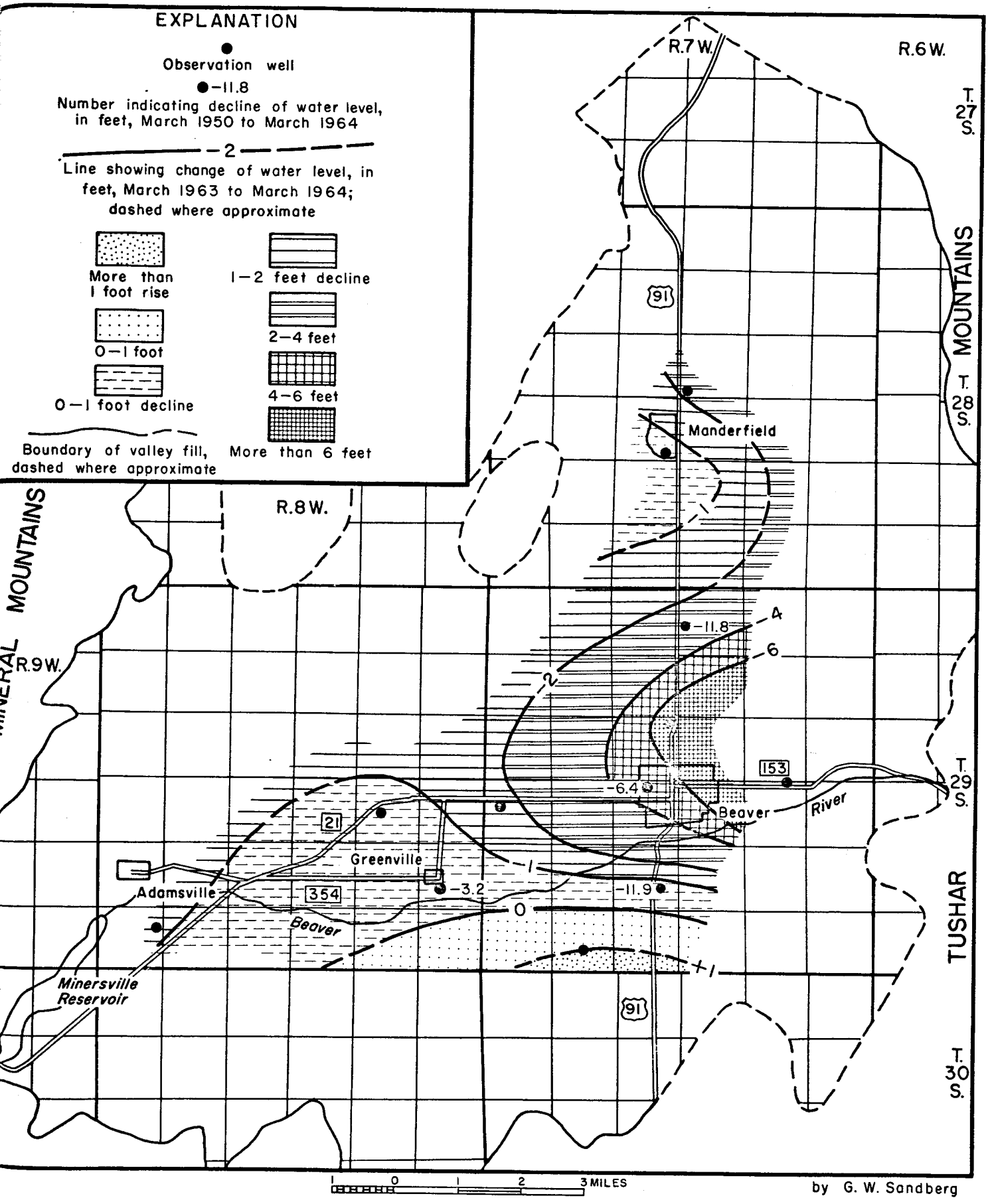


Figure 49.--Map of Beaver Valley showing changes of water levels, March 1963 to March 1964, and declines in selected wells from March 1950 to March 1964.

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Ground water occurs in the valley in unconsolidated deposits under both water-table and artesian conditions. The recharge areas for the aquifers are along the western base of the Tushar Mountain, and thence ground water moves southwestward through the valley, paralleling the course of the Beaver River.

During 1964, only one well was constructed in the valley. It was a 12-inch replacement well, to be used for irrigation.

The discharge from wells during 1964 was about 6,000 acre-feet of water, broken down as follows:

Irrigation (pumped wells)	5,000
Irrigation and stock (flowing wells)	1,000
Public supply (pumped wells)	100
Domestic and stock (pumped wells)	50

Water levels rose in all 12 observation wells measured in Beaver Valley from March 1964 to March 1965 and in 2 of the wells there was a net water-level rise from March 1950 to March 1965. The patterns of water-level change are shown in figure 45.

The relation of water-level fluctuations in a typical well and the cumulative departure from normal precipitation at Beaver is shown in figure 46. Water levels in the well show little correlation to long-term changes of precipitation. Furthermore, the water level is highest during the summer and lowest during the winter and spring. The controlling factor for water levels in Beaver Valley is the flow of the Beaver River, which provides most of the water used for irrigation. Large amounts of river water are spread on most of the irrigated land, and recharge to the ground-water reservoir is relatively great. The rise of water levels during 1964 probably was due to the increased flow of the Beaver River during 1964 (25,700 acre-feet) as compared to the flow in 1963 (19,950 acre-feet). Because of the large amount of recharge and the relatively small amount of ground water pumped, water levels remain consistently high in much of the valley regardless of variations in precipitation.

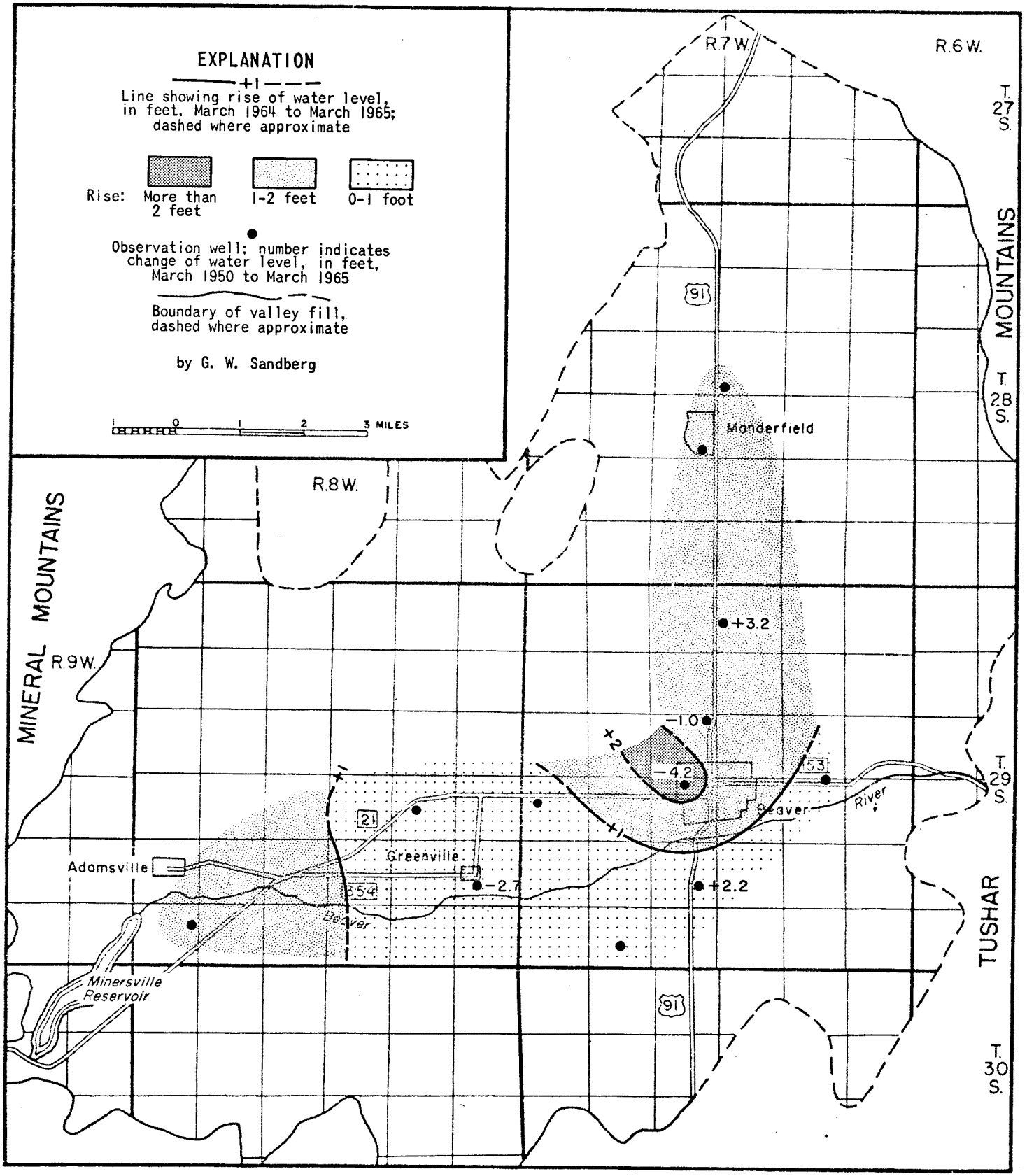

Figure 45.— Map of Beaver Valley showing change of water levels, March 1964 to March 1965 and changes in selected wells from March 1950 to March 1965.

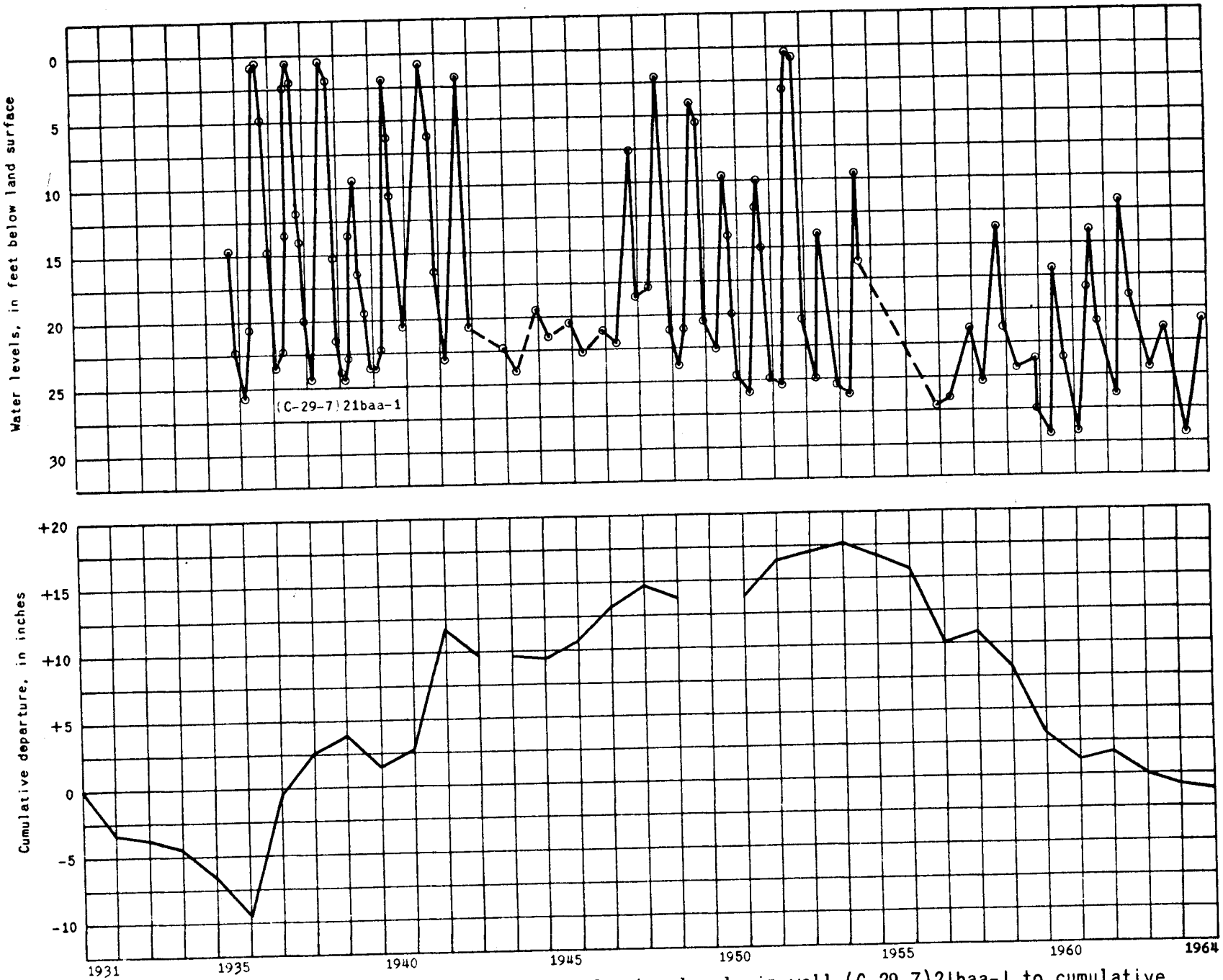

Figure 46.—Hydrograph showing relation of water levels in well (C-29-7)21baa-1 to cumulative departure from the 1931-60 normal annual precipitation at Beaver.

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Beaver Valley includes about 200 square miles in Beaver County between the Tushar Mountains on the east and the Mineral Mountains on the west. The Beaver River enters the valley from the east and flows across the valley to the Minersville Reservoir on the west.

Ground water occurs in the valley under both water-table and artesian conditions. The recharge areas for the aquifers are along the western base of the Tushar Mountains, and thence the ground water moves southwest and through the valley paralleling the course of the Beaver River. Some ground water is discharged by springs, seeps, and artesian wells in an area of about 6 square miles along the Beaver River between Beaver and Adamsville, but most ground-water discharge in Beaver Valley is from pumped wells.

During 1965, one 10-inch well was drilled for stock and domestic use in the valley.

Discharge from wells in the valley during 1965 was about 4,400 acre-feet, broken down as follows:

Irrigation (pumped wells)	3,250
Irrigation and stock (flowing wells)	1,000
Public supply (pumped wells)	100
Domestic and stock (pumped wells)	50

The discharge of 4,400 acre-feet of ground water is 1,700 less than that reported for 1964 (Arnow and others, 1965, p. 79). The decrease is due to a reduction in pumpage for irrigation during 1965 which resulted when above-normal precipitation lessened the need to draw on supplemental ground-water supplies for irrigation.

Water levels in the valley were as much as 8 feet higher in March 1966 than they were in March 1965 (fig. 39). Water levels rose in all 12 observation wells during this period, and in 3 wells there was a net water-level rise from March 1950 to March 1966 (fig. 39).

The relation of water-level fluctuations in a typical well and the cumulative departure from normal precipitation at Beaver is shown in figure 40. Water levels in the well show little correlation to long-term changes in precipitation. Furthermore, the water level is highest in summer and lowest in winter. The controlling factor for water levels in Beaver Valley is the flow of the Beaver River which provides most of the water used for irrigation. Large amounts of water are spread on most of the irrigated land, and recharge to the ground-water reservoir is relatively great. The rise of water levels during 1965 was due to the increased flow of the Beaver River during 1965 (33,810 acre-feet) as compared to the flow in 1964 (25,700 acre-feet) and 1963 (19,950 acre-feet). Because of the large amount of recharge and the relatively small amount of ground water pumped, water levels remain consistently high in much of the valley regardless of variations in precipitation.

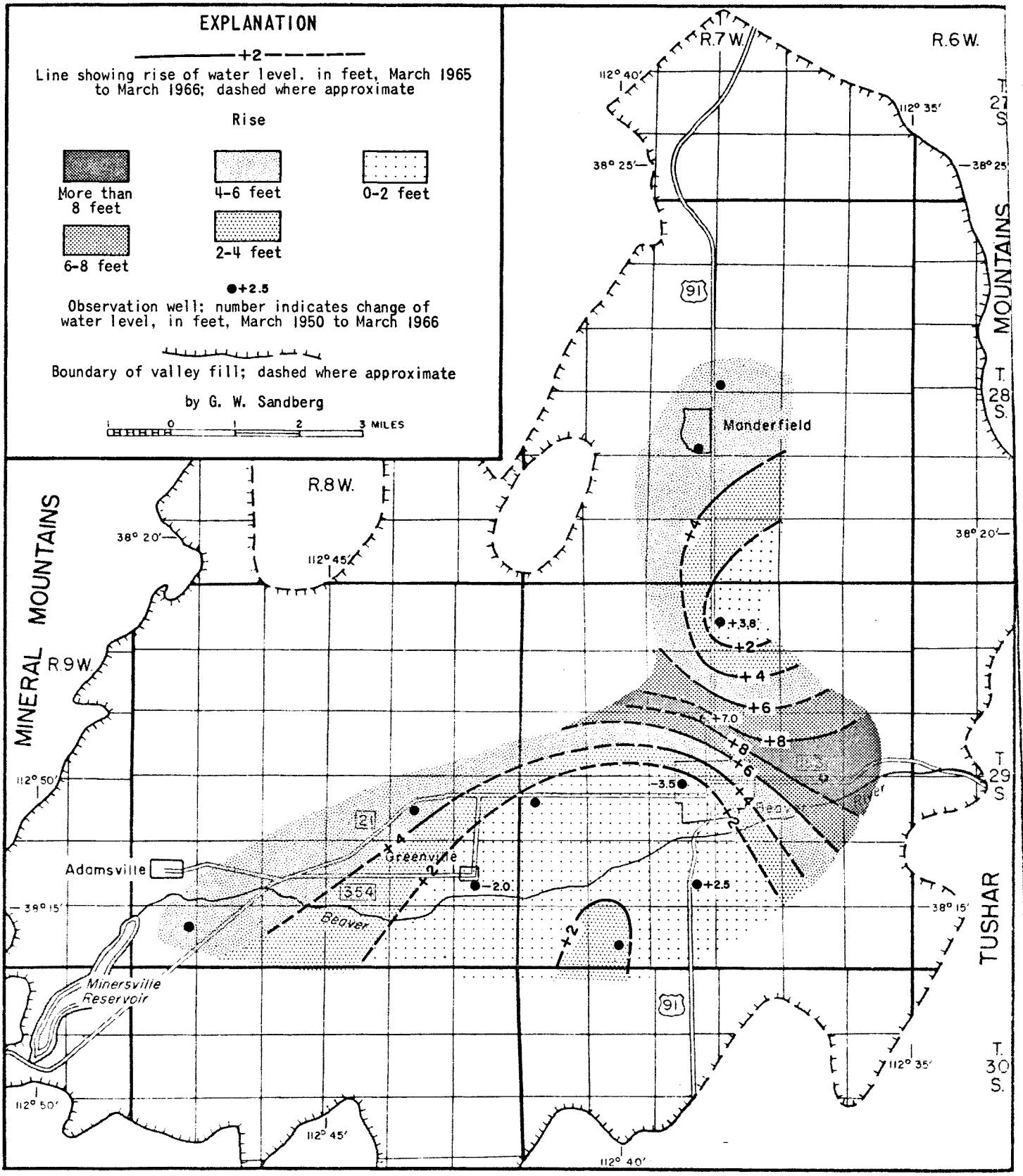

Figure 39.—Map of Beaver Valley showing change of water levels, March 1965 to March 1966.

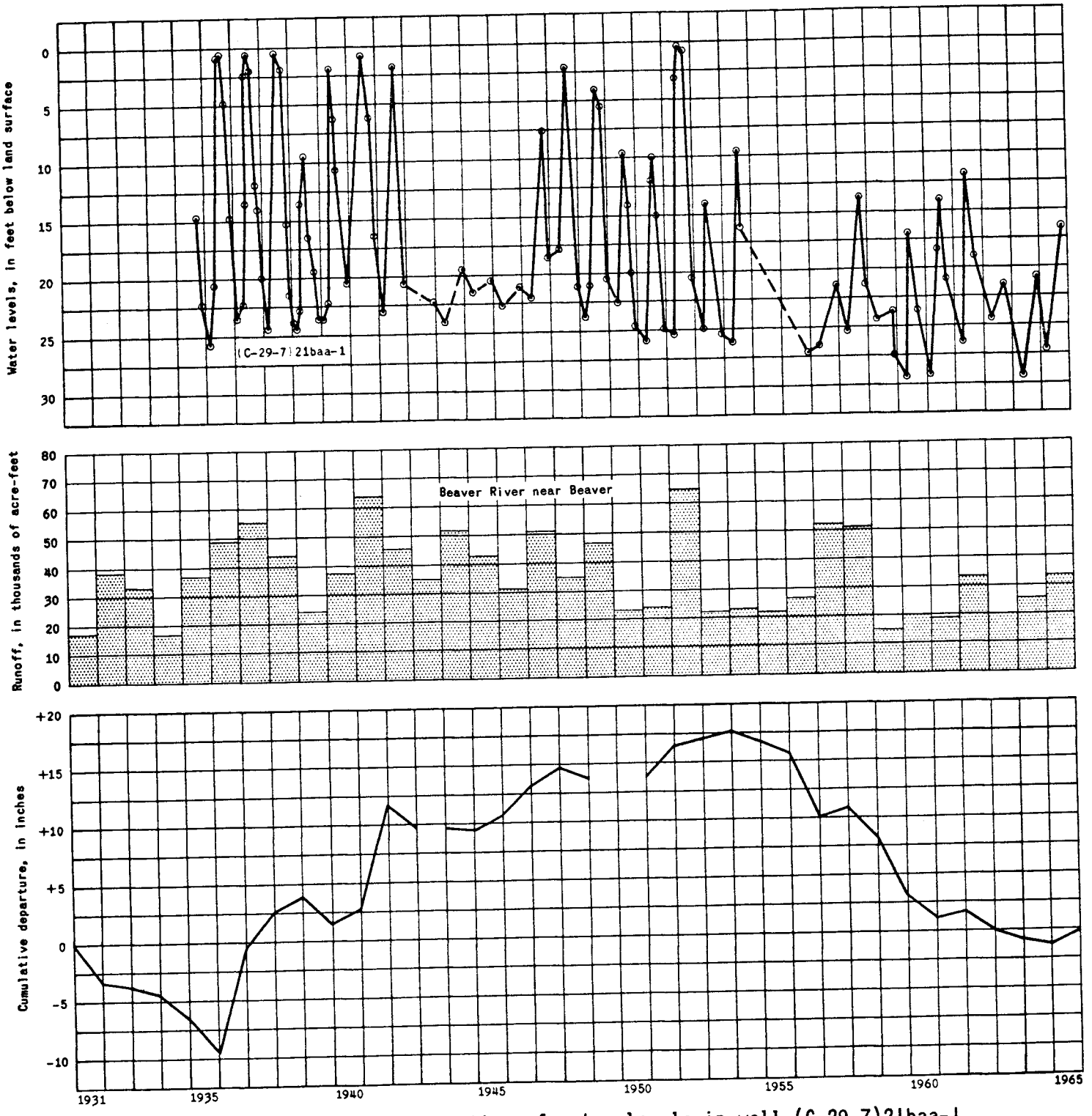

Figure 40.—Hydrograph showing relation of water levels in well (C-29-7)21baa-1 and the annual discharge of Beaver River near Beaver to the cumulative departure from the 1931-60 normal annual precipitation at Beaver.

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Ground water occurs in the valley under both water-table and artesian conditions. The natural recharge areas for the aquifers are along the western base of the Tusher Mountains, but much recharge also comes from infiltration of irrigation water diverted from the Beaver River. Ground water moves southwestward through the valley, paralleling the course of the Beaver River. Some ground water is discharged by springs, seeps, and flowing wells in an area of about 6 square miles along the Beaver River between Beaver and Adamsville, but most ground-water discharge in Beaver Valley is from pumped wells.

During 1966, five wells were constructed in the valley. All were 6 inches or more in diameter, and all were intended for domestic and stock use.

Discharge from wells in the valley during 1966 was about 5,800 acre-feet, broken down as follows:

Irrigation (pumped wells)	4,640
Irrigation and stock (flowing wells)	1,000
Public supply (pumped wells)	100
Domestic and stock (pumped wells)	60

The discharge of 5,800 acre-feet is 1,400 acre-feet more than that reported for 1965 (Hood and others, 1966, p. 75). The increase is due chiefly to increased pumping for irrigation during 1966.

Water levels in 10 observation wells in the valley were lower in March 1967 than they were in March 1966; they were slightly higher in two wells in the vicinity of Beaver (fig. 39).

Figure 40 shows the relation between water levels in well (C-29-7)21baa-1, annual discharge of the Beaver River near Beaver, and cumulative departure from the normal annual precipitation at Beaver. The generally high late summer water levels in the observation well indicate recharge from irrigated lands. The controlling factor for water levels in Beaver Valley is the flow of the Beaver River, which provides most of the water used for irrigation. The net decline of water levels from March 1966 to March 1967 reflects the decreased flow of the Beaver River because of below-normal precipitation during 1966.

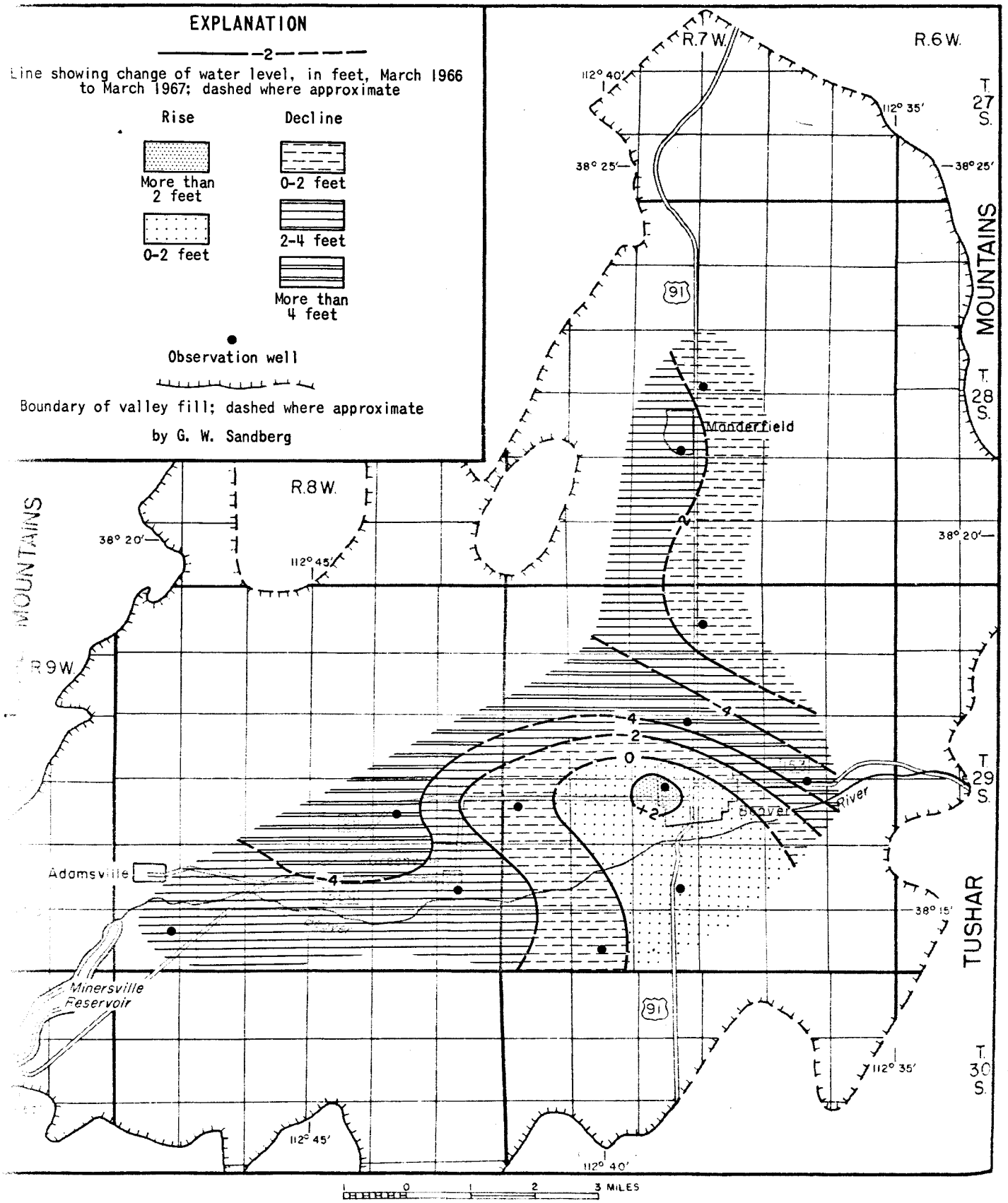

Figure 39.—Map of Beaver Valley showing change of water levels from March 1966 to March 1967.

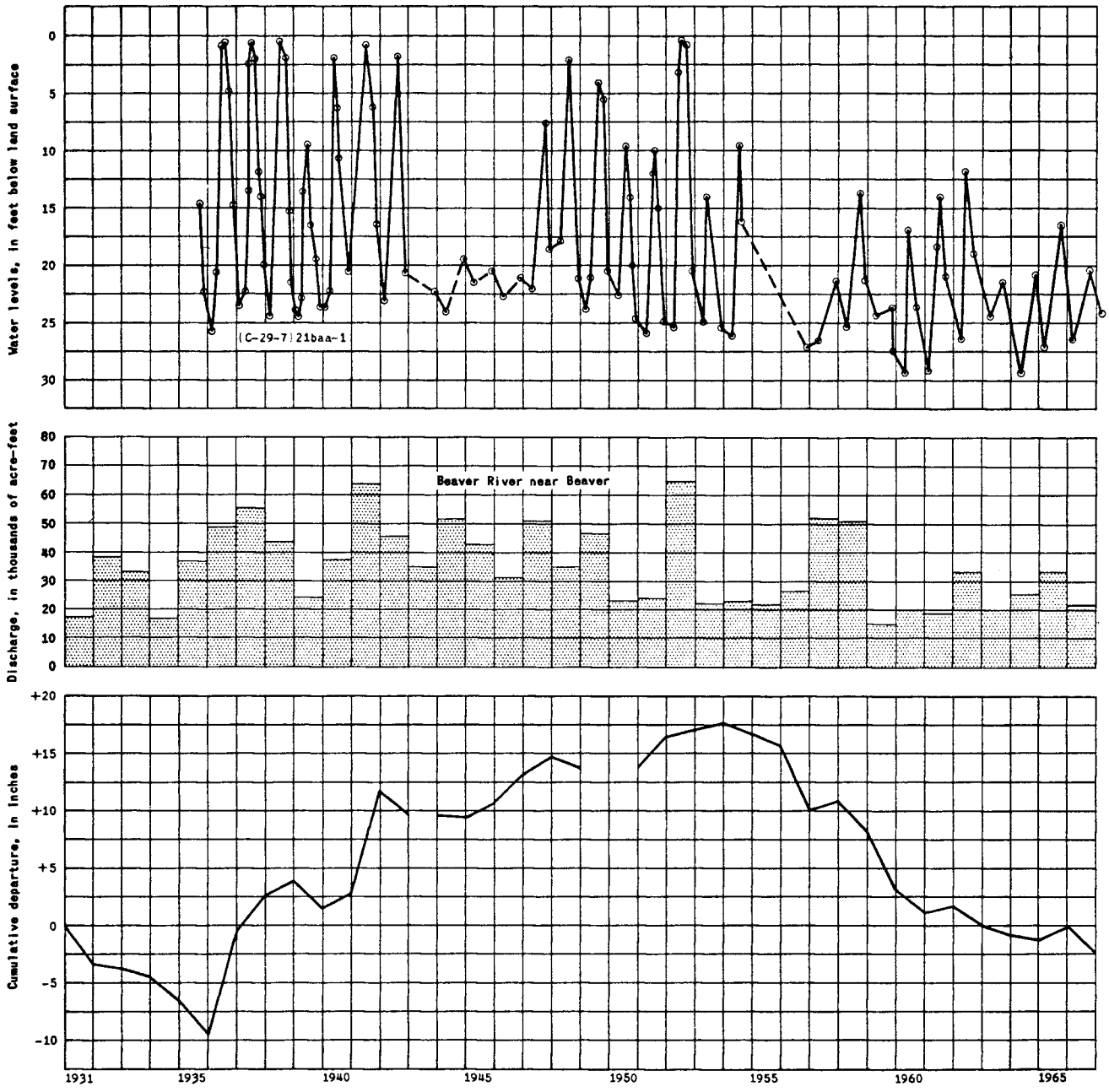

Figure 40.—Relation of water levels in well (C-29-7)21baa-1 and the annual discharge of the Beaver River near Beaver to the cumulative departure from the 1931-60 normal annual precipitation at Beaver.

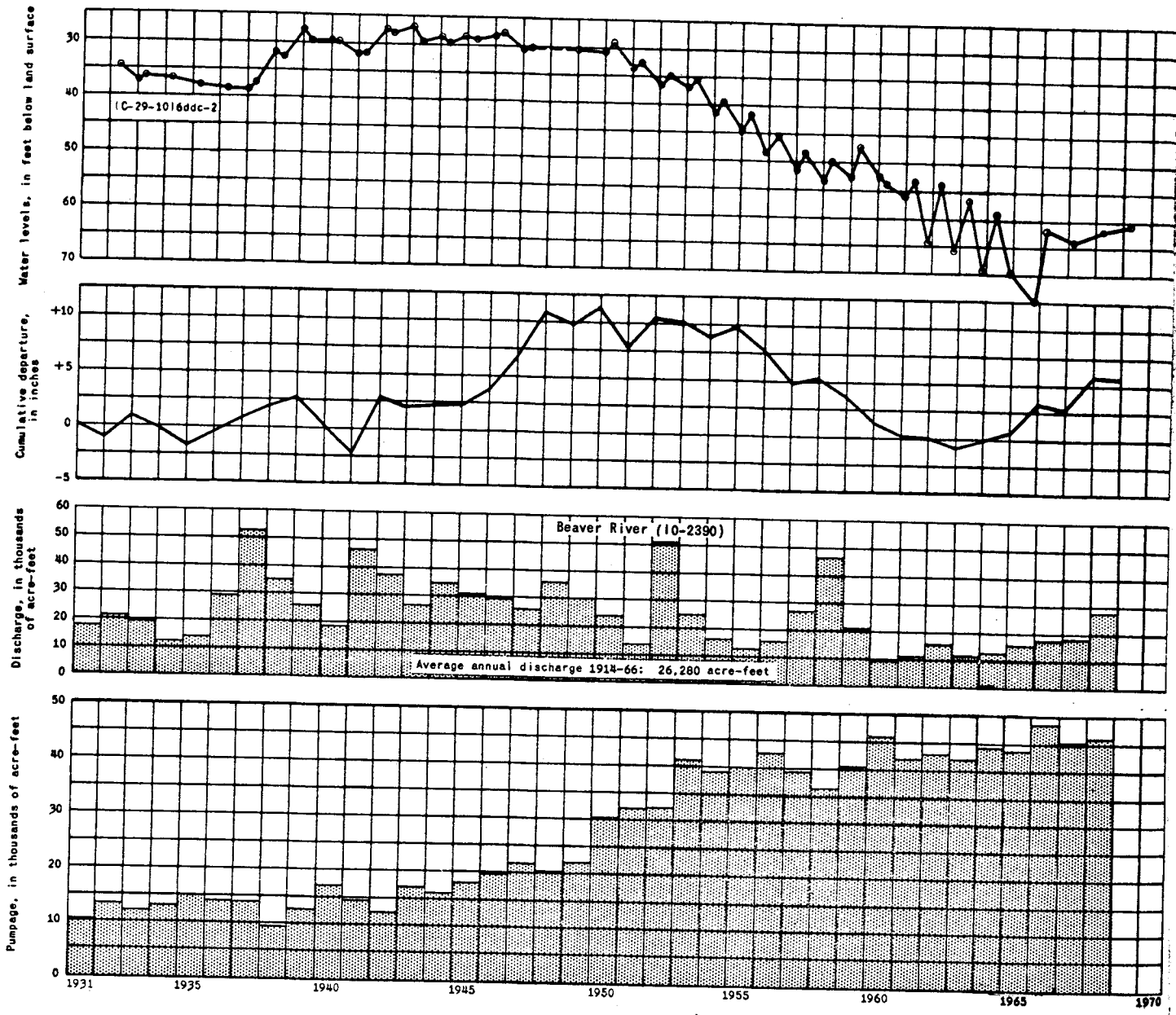

Figure 33.—Relation of water levels in well (C-29-10)6ddc-2 to cumulative departure from the 1931-60 normal annual precipitation at Milford airport, to discharge of Beaver River at Rockyford Dam near Minersville, and to pumpage for irrigation in the Milford district, Escalante Valley.

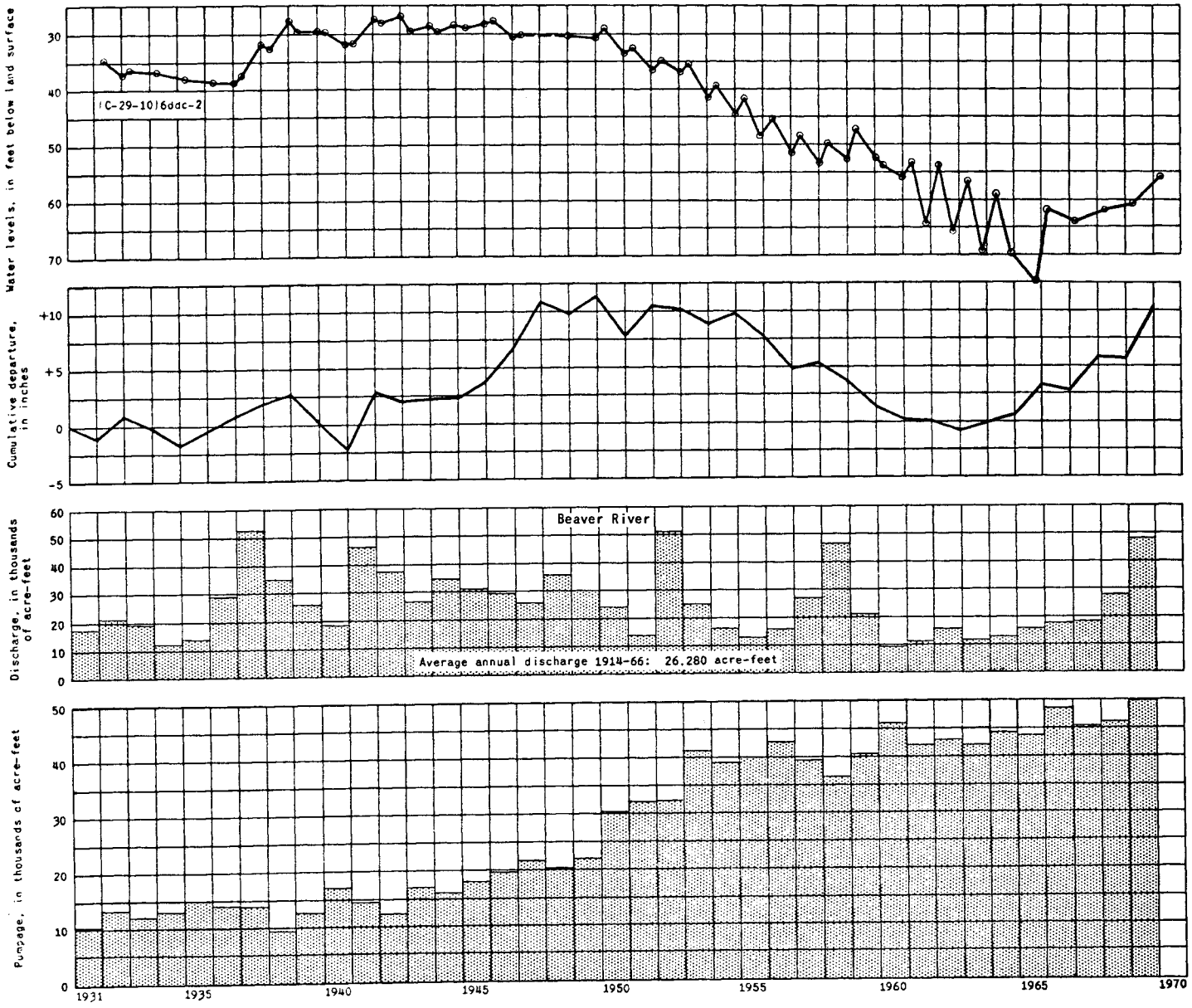

Figure 33.—Relation of water levels in well (C-29-10)6ddc-2 to cumulative departure from the 1931-60 normal annual precipitation at Milford airport, to discharge of Beaver River at Rockyford Dam near Minersville, and to pumpage for irrigation in the Milford district, Escalante Valley.

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Utah Department of Natural Resources
Division of Water Rights

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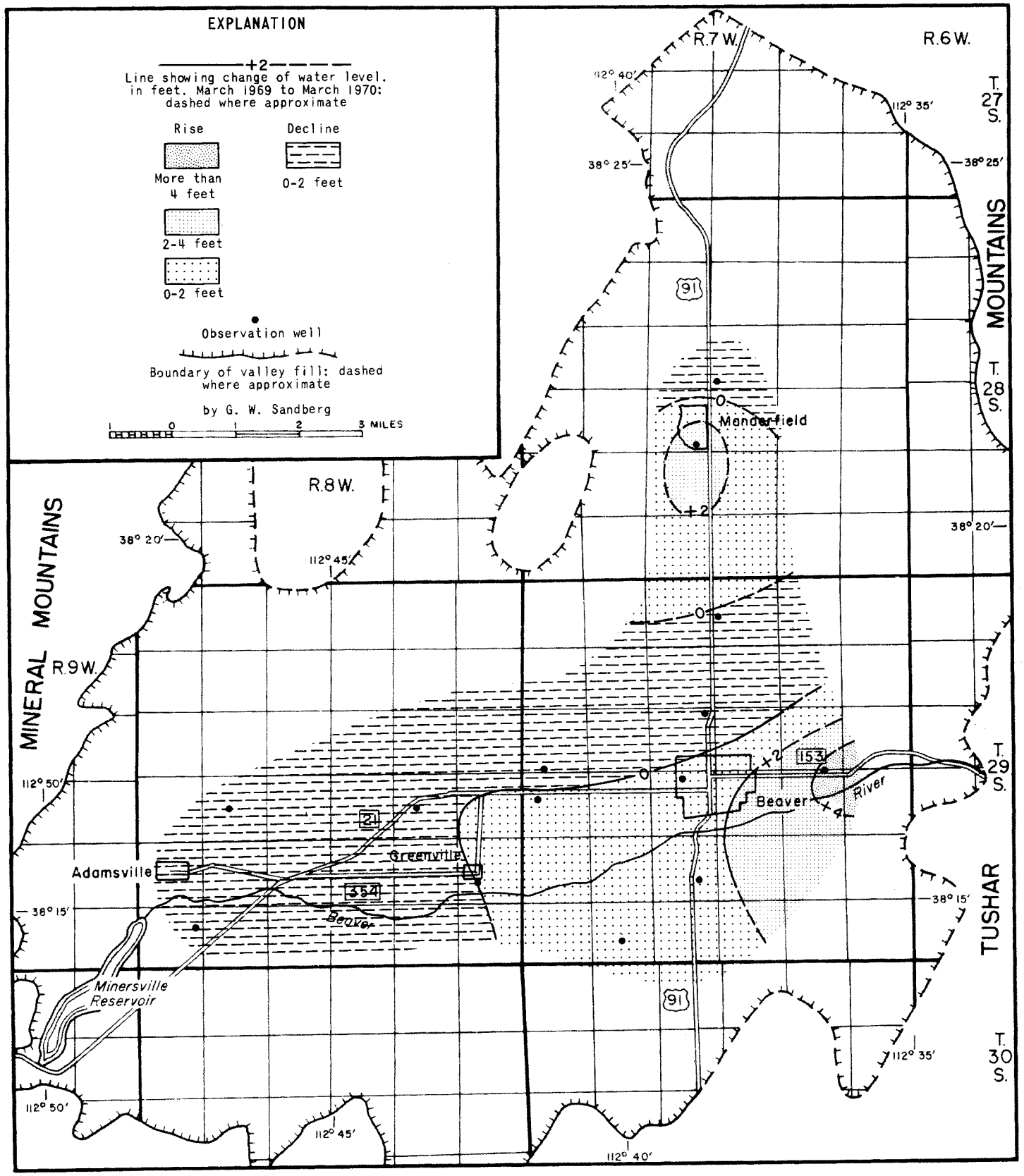

Map of Beaver Valley, Beaver County, Utah, showing change of ground-water levels, March 1969 to March 1970